

What is claimed is

Sub A3 R5

1. A thickened oil composition which is at a temperature T_s and which comprises

- (1) an oil, and
- (2) uniformly dispersed in the oil as a crystallized solid, a side chain crystalline (SCC) polymer which
 - (a) has a crystalline melting point, T_p , and an onset of melting temperature, T_o , and
 - (b) is substantially free of fluorine atoms, carboxylic acid groups, carboxylic acid salt groups, sulfonic acid groups, sulfonic acid salt groups, amido groups, pyrrolidino groups and imidazole groups;

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2. A composition according to Claim 1, wherein T_s is from 15 to 25 °C and T_p is 10 to 30 °C above T_s .

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15. A composition according to Claim 2 wherein T_p is 40 to 50 °C.

4. A composition according to Claim 2 wherein T_p is 43 to 48 °C.

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5. A composition according to Claim 3 wherein the SCC polymer has a heat of fusion of at least 20 J/g, and an onset-of-melting point T_o such that T_p-T_o is less than 10 °C .

25. A composition according to Claim 1 wherein the SCC polymer contains 10-30% by weight of repeating units containing hydroxyl groups.

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A composition according to Claim 1 wherein the SCC polymer

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- (a) has a T_p of 40-50 °C., and
- (b) consists essentially of

- (i) 70-99% by weight of repeating units derived from at least one

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5 n-alkyl acrylate or methacrylate ester in which the n-alkyl group contains 16 to 22 carbon atoms,

(ii) 1-30% by weight of repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyl-substituted alkyl group containing less than 12 carbon atoms, and

(iii) 0-30% by weight of repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains an unsubstituted alkyl group containing less than 16 carbon atoms.

10 8. A composition according to Claim 1 which contains less than 1% by weight of surface active agents, based on the weight of the oil.

15 9. A thickened oil composition which comprises

(1) an oil, and

(3) dispersed in the oil, a polymer which

(a) has a crystalline melting point, T_p , and an onset of melting temperature, T_o , such that $T_p - T_o$ is less than $T_p^{0.7}$;

(b) is soluble in the oil at temperatures above T_p ,

(c) has been dispersed in the oil by a process which comprises

(i) dissolving the polymer in the oil at a temperature above T_p , and

(ii) cooling the solution to crystallize the polymer in the oil, and

(d) is a side chain crystalline (SCC) polymer which is substantially free of fluorine atoms, carboxylic acid groups, carboxylic acid salt groups, sulfonic acid groups, sulfonic acid salt groups, amido groups, pyrrolidino groups and imidazole groups; the composition being at a temperature T_s which is below T_p .

Subj. Comp. → 10. A composition according to Claim 9 wherein T_s is from 15 to 25 °C and T_p is 10 to 30 °C above T_s .

11. A composition according to Claim 9 wherein T_p is 40 to 50 °C.

5 12. A composition according to Claim 9 wherein the SCC polymer has a heat of fusion of the least 20 J/g, and an onset-of-melting point T_o such that T_p-T_o is less than 10 °C.

10 13. A composition according to Claim 9 wherein the SCC polymer consists
essentially of
Subj. Comp. (i) 70-99% by weight of repeating units derived from at least one n-alkyl acrylate or methacrylate ester in which the n-alkyl group contains 16 to 22 carbon atoms,
(ii) 1-30% by weight of repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyl-substituted alkyl group containing less than 12 carbon atoms, and
(iii) 0-29% by weight of repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains an unsubstituted alkyl group containing less than 16 carbon atoms.
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25 14. A composition according to Claim 9 wherein the SCC polymer contains 10-30% by weight of the repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyl-substituted alkyl group containing less than 12 carbon atoms.

30 15. A thickened oil composition which is at a temperature T_s of 15 to 25 °C, and which comprises
(1) an oil, and
(2) a side chain crystalline (SCC) polymer which
(a) is uniformly dispersed in the oil as a crystallized solid,

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cont.*

- (b) has a crystalline melting point, T_p , of 43 to 48 °C, and
(c) consists essentially of
(i) 70-99% by weight of repeating units derived from at least one n-alkyl acrylate or methacrylate ester in which the n-alkyl group contains 16 to 22 carbon atoms,
(ii) 1-30% by weight of repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyl-substituted alkyl group containing less than 12 carbon atoms, and
(iii) 0-29% by weight of repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains an unsubstituted alkyl group containing less than 16 carbon atoms.

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16. A composition according to Claim 15 wherein the SCC polymer contains 15-25 percent by weight of the repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyl-substituted alkyl group.
17. A composition according to Claim 15 wherein the SCC polymer consists essentially of
(i) 70-99% by weight of the repeating units derived from at least one n-alkyl acrylate or methacrylate ester in which the n-alkyl group contains 16 to 22 carbon atoms, and
(ii) 1-30% by weight of the repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyethyl, hydroxypropyl, or hydroxybutyl group.
18. A composition according to Claim 17 wherein the SCC polymer contains 15-25 percent by weight of the repeating units derived from at least one acrylate or methacrylate ester in which the ester group contains a hydroxyl-substituted alkyl group.

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19. A composition according to Claim 15 which contains less than 1% by weight of surface active agents, based on weight of the oil.

sub A1

20. A method of making a thickened oil composition comprising an oil and, dispersed in the oil, a side chain crystalline (SCC) polymer which

- (a) has a crystalline melting point, T_p , and an onset of melting temperature, T_o , such that $T_p - T_o$ is less than $T_p^{0.7}$, and
(b) is substantially free of fluorine atoms, carboxylic acid groups, carboxylic acid salt groups, sulfonic acid groups, sulfonic acid salt groups, amido groups, pyrrolidino groups and imidazole groups;

10 the method comprising

- (i) dissolving the SCC polymer in the oil at a temperature above T_p , and
(ii) cooling the solution to crystallize the polymer in the oil.

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A⁸

add
B⁵

add C²

add
D⁶